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A FEW REPTILES AND FISHES FROM BATANGA, WEST AFRICA.

A small lot of the more important food-fishes and some reptiles were obtained in this part of the Cameroons some years ago by the Rev. R. H. Nassau, and sent to Princeton University. Recently they were placed in my hands by Mr. C. F. Silvester, for determination.

FISHES.

Hexanematicthys latiscutatus (Günther), "Hume" or "H-me." *Caranx africanus* (Steindachner), "Epakapaka." *Vomer setapinnis* (Mitchill). *Pomadasys jubelini* (Valenciennes), "Nyawa" or "Nijawe." *Pseudotolithus typus* Bleeker, "Une" or "Uve." *Periophthalmus koelreuteri* (Pallas).

REPTILES.

Dendraspis viridis (Hallowell), "Okenja." *Dendraspis jamesonii* (Schlegel). *Hapsidophrys lineata* Fischer. *Mabuya perrotetii* (Duméril and Bibron). *Varanus niloticus* (Linn.). *Agama colorata*, Daudin. *Chamaeleo dilepis*, Leach. *Crocodilus niloticus*, Linn.

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A SECOND RECORD FOR THE COULTER'S WHITEFISH.

(*Coregonus coulteri* Eigenmann.)

In the *American Naturalist*, November, 1892, p. 961, Eigenmann described a small species of whitefish from the Kicking Horse River, one of the head streams of the Columbia River in British Columbia. This species, which is said not to exceed 8 inches in length, appears to have been recorded from no other locality up to the present time.

In the collection of the Bureau of Fisheries there are 6 specimens of this species in a poorly preserved condition, which were received from Mr. James Oliver, Chignik, Alaska. They were collected in Second Lake and the stream connecting it with First Lake, about November 1, 1912. This species is said to resemble *Coregonus williamsoni*, but with larger scales. It also differs in a much blunter muzzle, fewer gill rakers, much smaller adult size, and in other respects.

The following tables show the principal characters as far as they could be determined, the proportions being given in percentages:

Total length in m.m.....	158	150	146	152	144	149
Length to base of caudal	145	142	136	140	136	140

PER CENT. OF LENGTH TO BASE OF CAUDAL.

Sex	♀	♂	♀	♀	♂	♂
Distance from tip of snout to nape.....	16.	17.8	17.9	16.2	16.2	15.5
Distance from nape to front of dorsal.....	28.4	27.5	27.3	31.7	28.4	28.6
Length of dorsal base	10.2	12.4	10.9	10.	9.3	10.8
Longest dorsal ray.....	13.2	14.7	14.8	13.9	14.6	13.1

Sex	♀	♂	♀	♀	♂	♂
Distance from posterior base of dorsal to front of adipose	24.8	25.5	25.	27.1	28.4	28.6
Length of base of adipose	4.7	4.6	3.9	3.1	4.	3.1
Distance from posterior adipose to origin of upper caudal lobe	13.8	12.4	12.5	13.9	10.5	12.7
Distance from tip of snout to base of pectoral fin	20.4	21.7	21.	19.3	21.9	22.4
Length of pectoral	15.3	17.	16.4	14.7	15.4	13.9
Distance from base of pectoral to base of ventral	30.6	30.2	28.9	32.5	30.8	31.7
Length of ventral	13.8	13.9	14.	12.4	13.8	12.4
Distance from base of ventral to front of anal	23.3	23.2	23.4	22.4	21.9	23.2
Length of base of anal	10.2	10.	10.1	9.6	11.3	9.3
Longest ray of anal	13.8	13.1	13.2	12.	13.	10.8
Least depth of caudal peduncle	6.5	6.9	6.2	6.5	6.9	6.2
Length of head	21.1	21.7	21.8	22.4	21.9	20.9

PER CENT. OF LENGTH OF HEAD.

Sex	♀	♂	♀	♀	♂	♂
Distance from tip of snout to posterior edge of preopercle	70.	75.	75.	68.9	70.3	74.
Interorbital width	23.3	25.	25.	24.1	25.9	25.9

Sex	♀	♂	♀	♀	♂	♂
Long diameter of eye	25.	25.	28.5	24.1	25.9	25.9
Distance from tip of snout to front of eye	25.	25.	25.	24.1	24.	22.2
Length of maxillary bone	23.3	23.2	25.	20.6	22.2	25.9
Length of mandible	36.6	35.7	33.9	32.7	35.1	35.1
Number of fully developed dorsal rays	9.	9.	9.	9.	9.	9.
Number of fully developed anal rays	10.	10.	10.	10.	11.	11.
Number of pectoral rays	15.	15.	15.	16.	15.	15.
Number of ventral rays	10.	10.	10.	10.	10.	10.
Number of branchiostegal rays, each side	8/8	8/8	8/8	7/7	7/8	?/7
Number of gillrakers, each side	4+8	4+8	4+9	4+8	5+9	?
	4+8	4+8	4+9	5+9	5+9	?
Number of scales.....	6-62-6	6-62-6	6-62	7-63-5		
Number of vertebrae				50.		

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A NOTE ON THE HIBERNATION OF *KINOSTERNON PENNSYLVANICUM*.

The manner of hibernation of our native mud-turtles comes so seldom under the observation of naturalists that the following note may be of interest.

March 25, 1917, was one of the first warm, bright days of spring in this vicinity. At 10:30 a. m., while working along the border of one of the Potomac marshes two miles below Alexandria, Va., we picked up a specimen of *Kinosternon pennsylvanicum* (Bosc) in a small thicket of *Smilax*. Casual examination showed that the animal had but recently come out of its place of hibernation. Its carapace and limbs were encrusted with freshly dried earth, and the turtle seemed more sluggish than usual in its reactions while being handled. This excited our curiosity, and a short search revealed an opening beneath some dead leaves, only eight or ten inches from the spot where the turtle was discovered. After clearing away the thorny entangling stems of green-briar, we were able to make a careful examination of the hole, and found that it had unquestionably been used as a place of hibernation.

The location chosen was about 50 yards distant from the marsh, in a shallow, furrowlike depression leading down through a gently sloping field. Broom-sedge covered most of the field, and a varied growth of shrubs and low trees was scattered through it. The excavation was near the center of a low but dense growth of *Smilax* four or five feet in width, so that it was protected on all sides from the approach of predatory animals. The soil here was a sandy loam, through which the tough roots of green-briar grew in interlacing lines. The earth was friable and easily thrust aside save where the root growths prevented. The opening through which the turtle had emerged was roughly elliptical in outline. It was broad enough to admit the turtle easily with its legs extended. The burrow descended at an angle of about 45 degrees, and was approximately 9½ inches deep. The pitch of descent decreased toward the lower end, and at the bottom the excavation was slightly widened, as if the turtle might have rested with its body at right angles to the burrow. The

main part of the burrow was open, though drifting leaves held by the *Smilax* stems had covered the entrance. In the lower part, however, was a mass of earth containing a considerable amount of water, so that it formed a stiff mud paste, which was very cold to the touch. So far as we could tell, the turtle had lain encased in this mud during its hibernation. The tunnel walls were dry.

Several fresh shells of *Aromochelys odoratus* and one or two of *Kinosternon pennsylvanicum* were seen lying about in wooded areas bordering this same marsh. Thus the emergence of these turtles from hibernation had been of interest to others. The shells had been eaten out and left lying on logs, stumps, or the ground. Apparently this was the work of crows. American Crows were feeding here in abundance, and with them were a few Fish Crows.

The turtle that we had found was taken home and placed in a basin of water. For several minutes it made no movement save to emit a series of bubbles from its nostrills, or to close and open an eye. Then it proceeded to extend and retract its neck slowly. At the same time it drew water into its mouth, and apparently drank. The jaws were opened and closed slowly. In a short time movement of the jaws ceased, but the turtle continued to draw water into the mouth and then expel it, the outdriven current setting up eddies that agitated the silt on the bottom of the basin. In a few more minutes the turtle became more alert and swam and walked about, thrusting its head to the surface.

When the turtle was first found, its skin was dry and wrinkled. The animal was able to retract its head and tail and to close both lobes of the plastron completely. By the following morning the skin about its legs was smooth and swollen, and it was unable to withdraw completely into its shell, owing to absorption of water.

On this morning (March 26) the turtle was killed and an examination of the viscera was made. It was found that the stomach contained a small amount of whitish mucus, part of which was mixed with earth. The small intestine was contracted and entirely empty. The upper third had thickened walls and was much larger in diameter than the lower portion. The linings of the intestinal canal for the space of an inch above the point of entrance of the hepatic duct was stained a deep brownish orange. This apparently was due to bile. The gall bladder was filled, and the bile, very dark green in color, was thickened to the point of viscosity, so that portions of it could be drawn over the enameled surface of the dissecting tray with a probe. Below the hepatic duct, the walls of the intestine were pale. An orange tint appeared four inches above the caecal expansion and increased in intensity to the point of junction of large and small intestines. The caecum was empty. In the rectum were four rounded masses of firm, hardened mucus, each as large as a pellet of number 8 shot. The cloaca was empty and completely contracted. The animal seemed to be normal in flesh, and small masses of orange-yellow fat persisted along the dorsal wall of the body cavity and in the region of the pelvic arch. Apparently metabolism had been in abeyance during the period of hibernation.

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SPADE-FOOT TOAD AT MASTIC, LONG ISLAND.

The morning of June 17, 1916, after heavy warm rain the preceding night there were singing Spade-foot Toads in a woodland pool beside a road. At mid-day one was seen to cross the road and hop away from the pool into the woods. Its colors matched the leaf-carpet wonderfully. Others remained all day.

One was captured in the pool and liberated the following day. It is remarkable how completely it was able to hide in a closely cut green lawn in bright sunlight by crouching at the bases of the grass. When liberated in the woods it disappeared backwards under the leaves, and remained with just the nose showing at the bottom of its entrance. On June 25, it was found again in this same spot under the fallen leaves in a shallow burrow in the ground, its nose showing. When disturbed it turned sideways, thus withdrawing completely and filling the mouth of the depression with sandy soil. July 3, on scraping away the dead leaves, there was no sign of the toad, but a spot of loose soil detected was investigated disclosing it at a depth of about $1\frac{1}{2}$ inches. This was the last seen of that particular individual, as on July 9, there remained only a neat steeply-slanting burrow, about 3 inches deep, empty.

A steady rain commencing the night before, continued through July 23, on which afternoon Spadefoot Toads were singing in a pool in pasture land near stands of trees. During a temporary silence cattle came close to the pool, only to gallop away in alarm when the noise recommenced. Investigation disclosed singing Spade-foots also in the woodland pool occupied several weeks earlier, and a greater number in woods now flooded just across the road.

Points of interest in these data are concealing coloration in the woods, skill at hiding, recurrence in the same pool with favorable conditions after 36 days (see Overton, COPEIA, Nos. 20 and 24), and an individual's remaining 15 days in one spot just under the fallen woodland leaves.

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